BIOLOGICAL EVALUATION
REGARDING
EPA APPROVAL
OF AN
AMENDMENT BY
THE LOS ANGELES WATER QUALITY CONTROL BOARD
TO
THE WATER QUALITY CONTROL PLAN
FOR THE LOS ANGELES REGION

REVISION OF THE TOTAL MAXIMUM DAILY LOAD FOR METALS FOR THE LOS ANGELES RIVER AND ITS TRIBUTARIES

WITH REGARD TO SPECIES UNDER THE JURISDICTION OF THE U.S. FISH AND WILDLIFE SERVICE AND THE NATIONAL MARINE FISHERIES SERVICE

Prepared by:

U.S. Environmental Protection Agency
Region IX
Water Division, Ecosystems Branch
Water Quality Assessment
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I. INTRODUCTION

A. DESCRIPTION OF ACTION

The action that is the subject of this Biological Evaluation is the Environmental Protection Agency's (EPA) determination, under Section 303(c)(3) of the Clean Water Act (CWA), that an amendment to the Water Quality Control Plan for the Los Angeles Region (Basin Plan), *Revision of the Total Maximum Daily Load for Metals for the Los Angeles River and its Tributaries* meets the requirements of the Clean Water Act (CWA). The amendment was adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) on April 9, 2015 under Resolution No. R15-004, adopted by the State Water Resources Control Board (SWRCB) on November 17, 2015, under Resolution 2015-0069, and certified by OAL on July 11, 2016 under OAL File No.2016-0526-02S.

The Amendment makes revisions to the Basin Plan in Chapter 3 (Water Quality Objectives) for the Los Angeles River (LAR) and tributaries to the LAR. The Amendment adopts site-specific objectives (SSO) for copper, based on water effects ratios (WERs), and adopts SSOs for lead, based on recalculated lead criteria.

In taking action on amendments to a state's water quality standards, EPA can approve or disapprove the entire amendment, or approve portions of the amendment and disapprove others. EPA evaluates each amendment individually, as well as in combination with the others. We have determined that the proposed SSOs for lead in the LAR and tributaries, meet the requirements of the CWA; therefore, our action is to approve the Amendment.

B. DESCRIPTION OF THE PROJECT AREA

The LAR watershed has an area of 824 square miles; the LAR flows 51 miles from the western end of the San Fernando Valley to the Queensway Bay and Pacific Ocean at Long Beach. Approximately 324 square miles of the watershed are forested or open space land including the area near the headwaters which originate in the Santa Monica, Santa Susana, and San Gabriel Mountains. The remaining 60% of the watershed is highly developed. The LAR and its tributaries have a total stream length of 837 miles of which approximately 205 miles are engineered.

C. OVERVIEW OF THE WATER QUALITY STANDARDS PROGRAM

The EPA's authorities under the water quality standards program are contained in sections 301, 303, and 304(a) of the CWA. Under section 303, the development of water quality standards is primarily the responsibility of authorized states and tribes, with EPA performing an oversight role. Water quality standards consist of three components:

1. Beneficial (designated) uses of waters;

2. Water quality criteria, expressed in numeric or narrative form, specifically reflecting the condition of a water body that is necessary to protect a given designated use, and
3. an Antidegradation policy that protects existing uses and provides a mechanism for maintaining high water quality.

Under Section 303(c), states must review their water quality standards every three years, adopt new or modified standards as appropriate, and submit such new and/or modified standards to EPA for review. If EPA determines that the standards meet the requirements of the CWA, then those standards are approved and become effective for the waters to which they apply. If EPA determines that the new and/or modified standards do not meet the requirements of the CWA, EPA must notify the state of the changes needed. If the state fails to make the necessary changes, EPA may propose and promulgate appropriate standards for the state.

II. INFORMATION USED IN ANALYSIS

A. SPECIES LIST

On August 10, 2016, the EPA R9 submitted a request by email to the U.S. Fish and Wildlife Service (USFWS) for a list of threatened and endangered species that might be affected by the EPA's action on the amendment to the Basin Plan for the LAR and select tributaries. On August 10, 2016, USFWS sent a letter via email (FWS-LA-16B0341-16SL0850) with a list of species that may occur at the subject site, which included species under the jurisdiction of the National Marine Fisheries Service (NMFS). On August 18, 2016, the EPA Region 9 sent a revised request for a species list to the USFWS, expanding the project area, and USFWS sent an amended species list and a map of critical habitat of the LAR watershed area on September 27, 2016 and October 3, 2016, respectively.

Listed Species

Birds
Least Bell's vireo, *Vireo bellii pusillus* (E, CH)
Southwestern willow flycatcher, *Empidonax traillii extimus* (E)
California least tern, *Sterna antillarum browni* (E, NCH)
Western snowy plover, *Charadrius nivosus* ssp. (T, CH)
Light-footed Ridgeway's rail, *Rallus obsoletus* (E, NCH)

Plants
California Orcutt grass, *Orcuttia californica* (E, NCH)
Salt marsh bird's-beak, *Cordylanthus maritimus* spp. *maritimus* (E, NCH)
Marsh sandwort, *Arenaria paludicola* (E, NCH)
Ventura marsh milk-vetch, *Astragalus pycnostachyus* var. *lanosissimus* (E, CH)
Gambel's watercress, *Nasturtium (Rorippa) gambelii* (E, NCH)

Spreading navarretia, *Navarretia fossilis* (T, CH)

<u>Amphibians</u>
Arroyo toad, *Anaxyrus californicus* (E, CH)
Red-legged frog, *Rana aurora draytonii* (T, CH)
Mountain yellow-legged frog, *Rana mucosa*, Southern DPS (E, CH)

<u>Fishes</u>
Santa Ana sucker, *Catastomus santaanae* (T, CH)
Steelhead Southern California DPS, *Oncorhynchus mykiss* (E, CH)
Unarmored three-spine stickleback, *Gasterosteus aculeatus williamsoni* (E, PCH)

KEY:

E = Endangered Listed as being in danger of extinction.
T = Threatened Listed as likely to become endangered in foreseeable future.
CH = Critical Habitat
NCH = No Critical Habitat
PCH = Proposed Critical Habitat

B. OTHER SOURCES

Species descriptions were taken from the US FWS ECOS Environmental Conservation Online System (https://ecos.fws.gov/ecp/) species profiles. Additional sources of species-related information included USFWS listing/de-listing notices, critical habitat designation notices, and recovery plans found on their respective websites. Information regarding the Basin Plan Amendment is based primarily on review of staff reports regarding the Amendments, prepared by the Regional Board.

III. PROPOSED ACTION AND EFFECTS ON LISTED SPECIES

A. DESCRIPTION OF AMENDMENT

The SWRCB Resolution Number 2015-0069, the Amendment to the Water Quality Control Plan for the Los Angeles Region: *Revision of the Total Maximum Daily Load for Metals for the Los Angeles River and its Tributaries* (the Amendment), makes revisions to the Basin Plan in Chapter 3 (Water Quality Objectives). The Amendment adopts site specific objectives for copper based on water effects ratios (WERs), and adopts site specific objectives for lead based on recalculated lead criteria.

Copper Water Effect Ratios (WERs)

EPA promulgated criteria for metals in the California Toxics Rule (CTR) as formulae that provide for the adjustment of the criteria values using site-specific water hardness, a conversion factor (CF), and the WER . The CTR criteria were promulgated pursuant to 40 C.F.R. 131.38(b)(1)(fn.i), (b)(2) and (c)(4) to allow adjustments to the criteria values via these factors, including the WER adjustment, within the context of the National Pollutant Discharge Elimination System permitting process, provided the WER itself complies with one of the requirements specified in 40 C.F.R. section 131.38(c)(4)(iii); that is, the WER uses the established default value (1), it is determined in accordance with EPA guidance, or it is determined on the basis of another scientifically defensible method adopted by the State and approved by EPA. EPA determines that the State properly determined the WERs in accordance with EPA guidance.

When an appropriate site-specific WER adjustment is made to a CTR criterion, EPA does not require submission of the adjustment to EPA for review and approval as a water quality standards revision, because the criterion itself is not being changed. EPA, nevertheless, worked with the Regional Board to ensure that the WER adjustment was appropriate and consistent with EPA guidance.

In 2007, EPA established the Copper Biotic Ligand Model (BLM) as 304(a) criteria. To ensure that the WERs are as protective as EPA's 304(a) criteria, the applicant provided a comparison of the Copper BLM predicted for each sampling event and the proposed hardness adjusted sample WERs (sWERs). EPA concludes that the proposed sWERs are as protective as the BLM and protective of the aquatic life beneficial use.

Lead Recalculation

The adopted lead criteria is a function of hardness expressed as the following equation:

Acute Criteria Equation = $WER * e^{(ma * \ln(hardness) + ba)} *$ conversion factor

The dissolved lead water quality objectives for the Los Angeles River and its tributaries are based on a recalculation of the water quality objectives established in 40 CFR §131.38 using the US EPA Recalculation Procedure (US EPA 1994, 1997) and using an internal US EPA draft dataset.

The 2008 dataset includes data on 16 more species and results in 18 more Genus Mean Acute Values (GMAVs) (Table 1). Consistent with EPA guidance the Final Acute Value (FAV) is derived from the 4 lowest GMAVs. To provide a margin of safety the FAV is divided by 2 to derive the final acute criteria. The chronic value is derived by dividing the FAV by the final acute to chronic ratio based on species with both acute and chronic data.

The slope of the regressions to calculate the 5th percentile GMAV is used in the equations.

The new slope in the recalculation is 1.466. This applies for both acute and chronic as the chronic values were calculated from the acute using the final acute to chronic ratio. The change in the intercepts is a function of the slope. The effect of hardness on the lead criteria is illustrated in Table 2.

CTR Acute Equation Dissolved = $e^{(1.273 * ln(\text{hardness}) - 1.460)} * (1.46203 - ln(\text{hardness}) * 0.145712)$
New Acute Equation Dissolved = $e^{(1.466 * ln(\text{hardness}) - 1.882)} * (1.46203 - ln(\text{hardness}) * 0.145712)$

CTR Chronic Equation Dissolved = $e^{(1.273 * ln(\text{hardness}) - 4.705)} * (1.46203 - ln(\text{hardness}) * 0.145712)$
New Chronic Equation Dissolved = $e^{(1.466 * ln(\text{hardness}) - 3.649)} * (1.46203 - ln(\text{hardness}) * 0.145712)$

Table 1. Summary of calculations to derive acute and chronic criteria for CTR based on 1984 data and the lead recalculation based on 2008 data. The recalculated acute and final criteria are in bold.

	1984 Data		**2008 Data**
Number of species	23	Number of species	39
Number of GMAVs	10	Number of GMAVs	28
4 Most Sensitive Genera	**GMAVs**	**4 Most Sensitive Genera**	**GMAVs**
Onchorynchus	2,448 ug/l	*Lecane*	165 ug/l
Aplexa	1,040 ug/l	*Ceriodaphnia*	147 ug/l
Daphnia	449 ug/l	*Gammarus*	144 ug/l
Gammarus	143 ug/l	*Diaptomus*	72 ug/l
Calculation of Acute and Chronic Criteria			
	1984 Data		**2008 Data**
Final Acute Value = 5th percentile GMAV	67.54 ug/l	Final Acute Value = 5th percentile GMAV	94.25 ug/l
Acute Criteria = FAV/2	**33.77 ug/l**	Acute Criteria = FAV/2	**47 ug/l**
Final Acute to Chronic Ratio (FACR)	51.29	Final Acute to Chronic Ratio (FACR)	11.70 ug/l
Chronic Criteria = FAV/FACR	**1.37 ug/l**	Chronic Criteria = FAV/FACR	**8.1 ug/l**
m_a (slope of acute regression)	1.273	Slope (acute)	1.466
Intercept (acute)	-1.460	Intercept (acute)	-1.882
b_a (slope of chronic regression)	1.273	Slope (chronic)	1.466
Intercept (chronic)	-4.705	Intercept (chronic)	-3.469

Table 2. Effect of hardness on the criteria.

	1984 data	**1984 data**	**2008 data**	**2008 data**
Hardness	**Pb-Acute**	**Pb-Chronic**	**Pb-Acute**	**Pb-Chronic**
50	30	1.2	42	7.2
100	65	2.5	103	17.6
200	136	5.3	248	42.4
300	209	8.0	411	70.3
400	281	10.8	585	100

The lead recalculation procedure was reviewed by EPA HQ Office of Science and Technology, and EPA found the recalculation to be consistent with US EPA guidance for the development of site-specific standards using recalculation procedures.

The effect of the WER and lead recalculation are to increase the allowable criteria in some cases by an order of magnitude. However, the Regional Board is applying antidegradation and anti-backsliding provisions to ensure that effluent concentrations do not exceed levels of water quality that can be maintained by wastewater facilities at the time of permit reissuance.

It is important to note that the revisions to the water quality objectives and the TMDL will not result in adding lead or copper to the Los Angeles River system. The USEPA guidance for the copper WER and lead recalculation is designed to ensure that the objectives will be as protective of aquatic life as the national criteria. The revised TMDL also requires permittees to comply with anti-degradation and anti-backsliding requirements. Permittees are required to track trends in water quality, and where increases are observed, evaluate the cause and identify additional watershed control measures to arrest the increase.

B. EPA'S ACTION

EPA Region 9 has approved the Amendment pending concurrence from the US Fish and Wildlife Service of our finding that the adopted site specific criteria are protective of all beneficial uses, including endangered species and their critical habitat. EPA Region 9 finds that the Los Angeles Regional Water Quality Control Board staff set forth detailed and sufficient justifications for site-specific lead recalculations for the LAR. The staff report and supporting documents clearly lay out the methods, use of EPA guidance, and the results.

C. SPECIES DESCRIPTIONS AND POSSIBLE EFFECTS

This section provides information regarding the possible effects of EPA's action on each listed species. For all listed plant species, EPA determines no effect as there is no habitat alteration, and thus will not be discussed further.

1. **Least Bell's vireo, *Vireo bellii pusillus* (E, CH)**

Status

The least Bell's vireo was listed as an endangered species on May 2, 1986.

Species Description

Least Bell's vireos are small songbirds that inhabit riparian areas. They forage at times in nearby chaparral and coastal sage scrub, preying on various insects: bugs, beetles, grasshoppers, moths, spiders, and caterpillars, either gleaning prey from leaves, twigs, and branches. The least Bell's vireo has not been observed drinking

water, and is believed to obtain all that it needs from the food it consumes
http://www.prbo.org/calpif/htmldocs/species/riparian/least_bell_vireo.htm

Critical Habitat
Critical habitat for least Bell's vireo was designated on February 2, 1994 (59 FR No. 22 4845-4867).

Threats
Loss of riparian habitat and cowbird parasitism.

Recovery Plan
A draft Recovery Plan for the least Bell's vireo was published in 1998.

Possible Effects of Action
EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the least Bell's vireo because while they are dependent on the aquatic/riparian ecosystem, their foraging ecology is not primarily dependent on the aquatic ecosystem. The action will have no effect on critical habitat.

2. **Southwestern willow flycatcher, *Empidonax traillii extimus* (E)**

Status
The Southwestern willow flycatcher was designated as an endangered species in the United States on February 27, 1995.

Species Description
The southwestern willow flycatcher (SWF) is a small bird (15 cm) and occurs in riparian habitats along rivers, streams, or other wetlands, where there is dense growth of willows and various other plants present, generally with an overstory of cottonwood. Throughout the range of the SWF, the described riparian habitats tend to be rare, widely separated, small, and separated by vast expanses of arid lands. It is a neo-tropical migrant that travels between breeding areas in the United States to wintering grounds in Central and South America

The SWF is an insectivore that catches insects while in flight from foliage, and from the ground. The primary diet of the SWF consists of small to medium size insects including bugs, wasps and bees, flies, beetles, butterflies and caterpillars, and spiders.
http://www.lcrmscp.gov/outreach/swfl_ybcu_fact_sheet.pdf

Critical habitat
Critical habitat for the Southwestern willow flycatcher was designated on January 3, 2013 (78 FR 343-534).

Threats
Loss and degradation of dense riparian habitats are the primary threat to the flycatcher. Historically, water developments that altered flows in the rivers and streams were the primary threat. Now, with riparian areas limited and re-growth difficult due to changes in flows, fire is a significant risk to remaining habitats. Cowbird parasitim poses a threat, and human disturbances at nesting sites may result in nest abandonment.

Recovery Plan
A final Recovery Plan for the southwestern willow flycatcher was published on August 30, 2002.

Possible Effects of Action
EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the southwestern willow flycatcher because while they are dependent on the aquatic /riparian ecosystem, their foraging ecology is not primarily dependent on the aquatic ecosystem.

3. **California least tern, *Sterna antillarum browni*** (E, NCH)

Status
The California least tern was listed as endangered on June 2, 1970.

Species Description
The California least tern nests in colonies on the Pacific coast of California and Baja, Mexico on relatively open beaches where vegetation is limited by tidal scouring. To avoid humans, some tern colonies nest at more inland mudflat and dredge fill sites. They feed primarily on small, shallow-bodied fresh- and saltwater fish, and their diet includes some small crustaceans and insects. http://www.biologicaldiversity.org/campaigns/esa_works/profile_pages/CaliforniaLeastTern.html

Critical Habitat
No critical habitat rules have been published for the California least tern.

Threats
Habitat destruction, recreational human disturbance, and predation (foxes, raccoons, dogs and cats).

Recovery Plan
The Recovery Plan was issued in 1980 and revised in 1985.

Possible Effects of Action
EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** California least tern. There is some speculation that contaminants such as lead may be contributing to population decline of least terns. A study looking at contaminants in eggs of least terns and snowy plovers (Holthem and Powell, 2000) in southern California showed that lead was below the limit of detection, and concluded that the contaminants in the study, including lead, were not elevated enough to cause concern.

4. Western snowy plover, *Charadrius nivosus* ssp. (T, CH)

Status
The Pacific coast population of the western snowy plover was listed as threatened on March 5, 1993.

Species Description
Snowy plovers live in barren to sparsely vegetated sand beaches, dry salt flats in lagoons, levees and flats at salt-evaporation ponds, river bars, along alkaline or saline lakes, reservoirs, and ponds. They feed on invertebrates in piles of seaweed and debris along the high tide line, gleaning insects from the surface as opposed to probing under the sand.

Critical Habitat
A final rule designating critical habitat along the coasts of California, Oregon, and Washington was published on June 19, 2012.

Threats
Habitat destruction, human activity on the beaches where the bird lives, primarily because feet and vehicles smash the eggs, and predation.

Recovery Plan
A final Recovery Plan for the snowy plover was published on August 13, 2007.

Possible Effects of Action
EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the western snowy plover. There is some speculation that contaminants such as lead may be contributing to population decline of snowy plovers. A study looking at contaminants in eggs of least terns and snowy plovers (Holthem and Powell, 2000) in southern California showed that lead was below the limit of detection, and concluded that the contaminants in the study, including

lead, were not elevated enough to cause concern.

5. Light-footed Ridgeway's rail, *Rallus obsoletus* (E, NCH)

Status

The light-footed Ridgeway's (LFR) rail (formerly known as, and named as in the FWS-ECOS species profiles, the light-footed clapper rail) was listed as endangered on October 13, 1970.

Species Description

The LFR rail lives exclusively in coastal salt marshes between Santa Barbara, California and San Quintin Bay, Baja California, Mexico. They nest in dense cordgrass, wrack deposits, and in hummocks of high marsh within the low marsh zone. They feed on snails, crabs, insects, isopods, and decapods in the tidal debris at the edge of the marsh.
http://www.biologicaldiversity.org/campaigns/esa_works/profile_pages/LightFootedClapperRail.html
http://newportbay.org/wildlife/birds/light-footed-clapper-rail/

Critical Habitat

No critical habitat rules have been published for the LFR rail.

Threats

Historically, habitat loss and destruction was the primary threat to the LFR rail, but land acquisition and conservation easements have successfully preserved what is left of the marsh habitat. Current threats include habitat degradation and modification, dredging, siltation, and possibly contaminants from urban runoff.
https://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20090810_5YR_LFCR.pdf

Recovery Plan

A revised Recovery Plan for the LFR rail was published on June 24, 1985.

Possible Effects of Action

EPA Region 9 determines that this action **may affect, and is not likely to adversely affect** the LFR rail. The Southern California Coastal Water Research Project (SCCWRP) conducted a study on the *Bioaccumulation of Contaminants in Avian Food Webs* (Sutula, *et al.*, 2005) focusing on LFR (non-viable) eggs in Upper Newport Bay UNB). The objectives of the study were to determine the concentration and degree of bioaccumulation of heavy metals and organochlorine compounds in the food web of the clapper rail and to evaluate contaminant impacts on clapper rails by examining nonviable eggs for evidence of egg shell-thinning or embryo developmental abnormalities. There was no indication in the results that lead was a contaminant of concern to the clapper rail in UNB.

6. Arroyo toad, *Anaxyrus californicus* (E, CH)

Status

The arroyo toad was listed as endangered on December 16, 1994.

Species Description

The arroyo toad lives in sandy washes with seasonally swift currents and associated upland and riparian habitats in areas that have seasonal creeks that are dry much of the time. They require sandy areas because during extended dry seasons, they survive by burrowing into sandy streamsides and sealing themselves within a thin shell of shed skin. Adults eat a variety of invertebrates, but mostly ants, especially nocturnal, trail-forming tree ants. Juveniles feed mostly on ants and small flies.
http://www.biologicaldiversity.org/species/amphibians/arroyo_toad/pdfs/5_year_review_5-21-10.pdf
http://www.californiaherps.com/frogs/pages/b.californicus.html

Critical Habitat

Critical habitat was designated for the arroyo toad on February 7, 2001 and revised on April 13, 2005.

Threats

Habitat destruction, modification and degradation are the primary threats to the arroyo toad, including urban sprawl, dams, grazing, mining, and off-road vehicles. Predation and recreational trampling are also threats.

Recovery Plan

A Recovery Plan for the arroyo toad was published on July 24, 1999.

Possible Effects of Action

EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the arroyo toad. While adult arroyo toads are dependent on the aquatic ecosystem for reproduction, their foraging ecology is not dependent on the aquatic ecosystem. The primary concern for lead effects to the arroyo toad are during the early life stages when they are dependent on the aquatic ecosystem to the greatest extent. Some studies have shown effects of lead on embryos and tadpoles of amphibians (Pérez-Coll and Herkovits, 1990, Chen et al. 2006, Enneku and Ezemonye, 2012, Shuhaimi-Othman et al. 2012). Most studies found effects at lead levels well above those proposed in the present Amendment. For example, Shukaimi-Othman et al. (2012) found, for the Sundra toad tadpoles an LC_{50} of 1500 ug/L (dissolved lead). The lowest effect of lead on amphibians was from Chen et al. (2006), looking at effects of lead on Northern leopard frog tadpoles. This study found sublethal effects (curvature of the spine, and slower swimming speed) at 100 ug/L (dissolved) Pb after 68 days. The list of species sent to USEPA by the FWS specifies that, in the project area, the arroyo toad is only found in Arroyo Seco. The dissolved lead criterion for the Arroyo Seco is 61 ug/L, which is protective of amphibian tadpoles.

7. Red legged frog, *Rana draytononii* (T, CH)

Status

The California red-legged frog was listed as threatened on May 23, 1996.

Species Description

The California red-legged frog lives in riparian and upland habitats, and breeds in aquatic habitats. Breeding sites include pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, lagoons, and artificial impoundments such as stock ponds. Their diet is variable; larvae eat algae, and adults consume primarily invertebrates, mainly insects, though larger frogs have been known to consume vertebrates like mice and Pacific frogs.
https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/es_ca-red-legged-frog.htm

Critical Habitat

Critical habitat was designated for the red-legged frog in 2006, and revised on March 17, 2010.

Threats

Elimination or degradation of habitat from land development and land use activities and habitat invasion by non-native aquatic species.

Recovery Plan

A final Recovery Plan for the California red-legged frog was published on September 12, 2002.

Possible Effects of Action

EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the California red-legged frog. Adult red-legged frogs forage outside of the aquatic environment, though they are dependent on the aquatic ecosystem for reproduction. The primary concern for lead effects on amphibians is during the early life stages when they are dependent on the aquatic ecosystem to the greatest extent. Some studies have shown effects of lead on embryos and tadpoles of amphibians (Pérez-Coll and Herkovits, 1990, Chen et al. 2006, Enneku and Ezemonye, 2012, Shuhaimi-Othman et al. 2012). Most studies found effects at lead levels well above those proposed in the present Amendment. For example, Shukaimi-Othman et al. (2012) found, for the Sundra toad tadpoles an LC_{50} of 1500 ug/L (dissolved lead). Lefcourt et al (1998) found a decrease in fright response (number of tadpoles responding to threats) by Columbia spotted frog tadpoles at a level of 5,000 ug/L dissolved lead. The lowest level for effect of lead on amphibians was from Chen et al. (2006), looking at effects of lead on Northern leopard frog tadpoles. This study found sublethal effects (curvature of the spine, and slower swimming speed) at 100 ug/L (dissolved) Pb after 68 days. The lead levels in water where the red-legged frog occurs, which is outside the urbanized areas of the LAR and tributaries, will likely be below 100 ug/L. The levels of lead proposed should be protective of the red-legged frog.

8. Mountain yellow-legged frog, *Rana mucosa*, Southern Distinct Population Segment (DPS) (E, CH)

<u>Status</u>
The mountain yellow-legged frog (Southern DPS) was listed as endangered on July 2, 2002.

<u>Species Description</u>
Mountain yellow-legged frogs are largely aquatic, and adults are rarely seen more than a meter (3.3 feet) from water. They historically inhabited lakes, ponds, marshes, meadows, and streams. Reproduction is aquatic. Mating and egg-laying occurs after high creek waters have subsided, from March - May in the southern California populations. They consume mostly terrestrial and aquatic invertebrates, including beetles, ants, bees, wasps, flies, and dragonflies. Tadpoles may also be consumed.
https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/es_mt-yellow-legged-frog.htm

<u>Critical Habitat</u>
Critical habitat was designated for the mountain yellow-legged frog Southern DPS on September 14, 2006.

<u>Threats</u>
Habitat degradation and fragmentation, predation and disease, climate change, and the interaction of these various stressors impacting small remnant populations are the primary threat to the mountain yellow-legged frog.

<u>Recovery Plan</u>
There is no approved Recovery Plan for the mountain yellow-legged frog Southern DPS.

Possible Effects of Action

EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the Mountain yellow-legged frog Southern DPS. Adult mountain yellow-legged frog Southern DPS mainly forage outside of the aquatic environment, though they have been known to consume tadpoles and are dependent on the aquatic ecosystem for reproduction. The primary concern for lead effects on amphibians is during the early life stages when they are dependent on the aquatic ecosystem to the greatest extent. Some studies have shown effects of lead on embryos and tadpoles of amphibians (Pérez-Coll and Herkovits, 1990, Chen et al. 2006, Enneku and Ezemonye, 2012, Shuhaimi-Othman et al. 2012). Most studies found effects at lead levels well above those proposed in the present Amendment. For example, Shukaimi-Othman et al. (2012) found, for the Sundra toad tadpoles an LC_{50} of 1500 ug/L (dissolved lead). Lefcourt et al (1998) found a decrease in fright response (number of tadpoles responding to threats) by Columbia spotted frog tadpoles at a level of 5,000 ug/L dissolved lead. The lowest level for effect of lead on amphibians was from Chen et al. (2006), looking at effects of lead on Northern leopard frog tadpoles. This study found sublethal effects (curvature of the spine, and slower swimming speed) at 100 ug/L (dissolved) Pb after 68 days. The lead levels in water where the mountain yellow-legged frog Southern DPS occurs, which is outside the urbanized areas of the LAR and tributaries, will likely be below 100 ug/L (Table 3). The levels of lead proposed should be protective of the mountain yellow-legged frog Southern DPS.

9. Santa Ana sucker, *Catastomus santaanae* (T, CH)

Status

The Santa Ana sucker was listed as threatened on April 12, 2000.

Species Description

Santa Ana suckers live in the shallow parts of rivers and streams in flashy systems. During rainy season floods, they refuge in backwater eddies and other less turbulent areas. Preferred substrates are generally coarse and consist of gravel, rubble, and boulders with growths of algae. The Santa Ana sucker feeds almost entirely on algae, eating only a very small amount of insect larvae and detritus. For this project area, they are only found in Tujunga Creek.
http://www.biologicaldiversity.org/species/fish/Santa_Ana_sucker/natural_history.html

Critical Habitat

Critical habitat was designated for the Santa Ana sucker on January 4, 2005, and the last revision was published on December 14, 2010.

Threats

Habitat destruction, fragmentation, and hydrological modification are the primary threats to the Santa Ana sucker. Urban development, recreation, and introduced predators are also listed as threats. Threats listed since the first designation include water quality degradation from point and nonpoint sources and increase in wildfires.
https://www.fws.gov/carlsbad/tespecies/Recovery/documents/Recovery%20Outline%20for%20Santa%20Ana%20Sucker-3-30-2012.pdf

Recovery Plan

A draft Recovery Plan notice of availability for the Santa Ana sucker was published on November 24, 2014.

Possible Effects of Action

EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the Santa Ana sucker. In the project area, the Santa Ana sucker occurs only in Tujunga Wash (Creek), where the calculated lead chronic criterion is 55 ug/L (dissolved lead). In a study looking at the sensitivity of three fishes to metals, Buhl (1997) found that the razorback sucker (*Xyrauchen texanus*) had a 98 day LC_{50} of >170,000 ug/L, a SMAV of >22,440, and a SMCV of 1,918 ug/L. The EPA determines that the razorback sucker is an appropriate surrogate species for the Santa Ana sucker and finds that the proposed lead values are protective of the Santa Ana sucker.

10. Steelhead Southern California DPS, *Oncorhynchus mykiss* (E, CH)

Status

Southern California steelhead were listed as an endangered species under the Endangered Species Act (ESA) on June 17, 1998. Following a status review in 2005, a final listing determination was issued on January 5, 2006 for the Steelhead Southern California DPS.

Species Description

Steelhead are anadromous, and juveniles are born in freshwater and undergo smoltification allowing them to migrate to and mature in saltwater for two to four years before returning to their natal rivers or streams to reproduce. Females excavate a nest (redd) in streambed gravels where eggs are deposited. After fertilization by the male, incubation is from three weeks to two months; the young fish emerge two to six weeks later. Juveniles feed primarily on zooplankton. Adults feed on aquatic and terrestrial insects, mollusks, crustaceans, fish eggs, minnows, and other small fishes.

O. mykiss exhibit three basic life-history strategies: fluvial-anadromous (migration between freshwater and saltwater), lagoon-anadromous (migration to and from a brackish lagoon) and freshwater residency (remain in freshwater). The diversity of these life-history strategies has allowed *O. mykiss* to take advantage of different habitats and to persist in the highly variable southern California environment. *O. mykiss* can also spawn in non-natal streams and thus re-colonize watersheds whose populations have been extirpated.
http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/south_central_southern_california/southern_california_steelhead_recovery_plan_executive_summary_012712.pdf
http://www.fisheries.noaa.gov/pr/species/fish/steelhead-trout.html

Critical Habitat
Critical habitat was designated for the Southern California steelhead on September 2, 2005 (70 FR 52488).

Threats
The destruction and modification of habitat is one of the primary causes of the decline of the Southern California Steelhead. There are also significant threats from water and land management practices that have degraded freshwater and estuarine habitats, reducing the capability of *O. mykiss* to persist in the affected watershed areas.

Recovery Plan
A Recovery Plan was issued for the southern California steelhead in January 2012.

Possible Effects of Action
EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the Southern California steelhead. Sublethal effects of lead toxicity to steelhead embryos were found (Rombough, 1985); at 10,000 ug/L Pb, after 56 hours, lead was able to penetrate the zona radiata. It is unclear what effect, other than body burden, this has on the embryo. The highest level of lead proposed in this Amendment, in the urbanized area of the LAR, is 170 ug/L, far lower than the levels cited for effects in the study. Dave and Xiu (1991), looked at early embryo mortality, median hatching time and median survival time for zebrafish (*Brachydanio rerio)* embryos. They found that high concentrations of lead (480 and 960 ug/L) inhibited hatching by killing the embryos, and lower concentrations inhibited hatching, but no clear dose-response relationship was established. The "no effect" level of lead on zebrafish in the study was 30 ug/L. While steelhead used to inhabit the LAR, none have been seen there since 1948, primarily due to habitat destruction and alteration. It is hoped that the restoration of the LAR will encourage recolonization of steelhead, which do not inhabit the

LAR at the present time.
http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/south_central_southern_california/southern_california_steelhead_recovery_plan_executive_summary_012712.pdf

11. Unarmored threespine stickleback, *Gasterosteus aculeatus williamsoni* (E)

Status
The unarmored threespine stickleback (UTS) was listed as endangered in 1970.

Species Description
Unarmored threespine sticklebacks (UTS) are small, up to 6 cm, and inhabit slow moving reaches or quiet water microhabitats of streams and rivers. Optimal habitats are well shaded by dense vegetation, though in more open reaches, algal mats provide refuge. Unarmored threespine sticklebacks forage on insects, small crustaceans, snails, as well as flatworms and nematodes.

UTS reproduce year-long, with less breeding activity from October to January (USDI-FWS 1985d). They require adequate aquatic vegetation and slow-moving water for reproduction so males can establish and defend territories. Male UTS build nests of plant debris and algae and court females that enter the territory. The eggs of many females may occur in a single nest. The male defends the nest including newly hatched fry. It is believed that UTS live only for one year.
http://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20090529_5YR_UTS.pdf

Critical Habitat
Critical habitat has not been designated for the unarmored threespine stickleback.

Threats
Threats include dewatering of streams, habitat alteration, introduction of exotic predators, and pollution.
http://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20090529_5YR_UTS.pdf

Recovery Plan
A Recovery Plan was first issued on December 27, 1977, and was revised on December 26, 1985.

Possible Effects of Action
EPA Region 9 has determined that the action **may affect but is not likely to adversely affect** the unarmored three-spined stickleback. The UTS were historically found throughout Southern California, but are presently only found in the upper Santa Clara River and its tributaries in Los Angeles County, San

Antonio Creek on Vandenberg Air Force Base in Santa Barbara County, and the Shay Creek vicinity in San Bernardino County.
http://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20090529_5YR_UTS.pdf

IV. MAGNUSON-STEVENS ACT

Magnuson-Stevens Fishery Conservation and Management Act and the Department of Commerce's Essential Fish Habitat (EFH) consultation regulations (50 CFR 600.905-930) include a mandate that Federal agencies must consult with the secretary of Commerce on all activities, or proposed activities, authorized, funded or undertaken by the agency, that may adversely affect EFH.

No Essential Fish Habitat is present in the Los Angeles River so no consultation is necessary.
http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

V. SUMMARY

EPA expects that its approval of the lead recalculation for the Los Angeles River and tributaries may affect, but is not likely to adversely affect any of the listed species or their critical habitat.

It is important to note that the revisions to the water quality objectives and the TMDL will not result in adding lead to the Los Angeles River system. The USEPA guidance for the lead recalculation is designed to ensure that the objectives will be as protective of aquatic life as the national criteria. The revised TMDL also requires permittees to comply with anti-degradation and anti-backsliding requirements. Permittees are required to track trends in water quality, and where increases are observed, evaluate the cause and identify additional watershed control measures to arrest the increase.

Adopting the lead recalculation is as stringent as the USEPA National Toxics Rule recommended 304(a) criteria and will have no adverse impact on endangered species or associated habitat. The Amendment results in no modification of the physical environment, and changes no beneficial uses. EPA has determined that this action is **not likely to adversely affect** (NLAA) federally listed threatened or endangered species or critical habitat because the water quality standards adopted for protection of aquatic life and wildlife are more stringent than the national criteria.

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